

II. Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of adaptive resource allocation in transmitting data, comprising:
 - allocating a resource to each of a plurality of data transmitting active connections, the plurality of active connections belonging to more than one class of service;
 - determining a lender class of service for each active connection from which resources may be reallocated to the active connection;
 - periodically comparing the resource usage of an active connection to an upper threshold and a lower threshold;
 - borrowing resources from the lender class of service for the active connection in response to the current usage exceeding the upper threshold; ~~and~~
 - returning resources to the lender class of service from the active connection in response to the current usage being less than the lower threshold;
 - recording a time of the last resource reallocation action when resource was borrowed or returned for the active connection; and
 - comparing a current time with the last resource reallocation action time and proceeding or not proceeding to borrowing in response to the difference therebetween.
2. (Original) The method, as set forth in claim 1, wherein periodically comparing the resource usage comprises comparing the resource usage of the active connection in response to receiving incoming data on the active connection.
3. (Original) The method, as set forth in claim 1, wherein periodically comparing the resource usage comprises comparing the resource usage of the active connection in response to receiving an incoming cell of data on the active connection.
4. (Cancelled).

5. (Original) The method, as set forth in claim 1, further comprising:
recording a time of the last resource reallocation action when resource was borrowed or returned for the active connection;
comparing a current time with the last resource reallocation action time; and
proceeding to borrowing in response to the difference between the current time and the last resource reallocation action time being greater than a predetermined minimum time spacing requirement, and not proceeding to borrowing in response to the difference between the current time and the last resource reallocation action time being less than or equal to the predetermined minimum time spacing requirement.

6. (Original) The method, as set forth in claim 1, further comprising:
recording a time of an oldest borrow action when resource was borrowed for the active connection;
comparing a current time with the oldest borrow action time; and
proceeding to returning tin response to the difference between the current time and the oldest borrow action time being greater than a predetermined maximum borrow time requirement.

7. (Original) The method, as set forth in claim 1, wherein borrowing comprises:
determining available resources of the lender class of service; and
proceed to borrowing if the available resources is sufficient.

8. (Original) The method, as set forth in claim 1, further comprising:
storing data associated with each borrow action for each active connection, including:
a borrow action time;
an amount of resource borrowed for the active connection; and
an weight increment for the active connection.

9. (Original) The method, as set forth in claim 1, further comprising:
storing data associated with each active connection, including:
 a time of last resource reallocation for the active connection;
 an enable indicative of whether resource reallocation is permitted for the active connection;
 a lender class identifier indicative of the class of service that resources can be borrowed from;
 an upper threshold indicative of need to borrow resources; and
 a lower threshold indicative of need to return to borrowed resources.
10. (Original) The method, as set forth in claim 9, wherein storing data associated with each active connection further comprises:
 storing a minimum time spacing between resource reallocation actions; and
 storing a maximum time to return borrowed resources.
11. (Original) The method, as set forth in claim 8, further comprising storing data associated with each borrow action for each active connection in a linked list, with the oldest borrow action at the head of the linked list.
12. (Original) The method, as set forth in claim 11, wherein returning borrowed resources comprises removing an oldest link in the linked list.
13. (Original) The method, as set forth in claim 1, further comprising first scheduling resources using a weighted round robin method.
14. (Original) The method, as set forth in claim 1, wherein borrowing and returning resources comprise borrowing and returning bandwidths.
15. (Original) The method, as set forth in claim 1, wherein borrowing and returning resources comprise increasing and decreasing data sending rate.

Claims 16-23 (Cancelled).

24. (Currently Amended) A method of adaptive dynamic weight assignment for transmitting data, comprising:

- assigning a total weight to each class of services;
- assigning a weight to each of a plurality of data transmitting active connections in each class of services;
- determining a lender class of service for each active connection from which weighting may be reallocated to the active connection;
- periodically comparing the resource usage of an active connection to an upper threshold and a lower threshold;
- borrowing additional weighting from the lender class of service for the active connection in response to the current usage exceeding the upper threshold; ~~and~~
- returning borrowed weighting to the lender class of service from the active connection in response to the current usage being less than the lower threshold; and
- storing data associated with each borrow action for each active connection, including:
 - a borrow action time;
 - an amount of resource borrowed for the active connection; and
 - a weight increment for the active connection.

25. (Original) The method, as set forth in claim 24, wherein periodically comparing the resource usage comprises comparing the resource usage of the active connection in response to receiving incoming data on the active connection.

26. (Original) The method, as set forth in claim 24, wherein periodically comparing the resource usage comprises comparing the resource usage of the active connection in response to receiving an incoming cell of data on the active connection.

27. (Original) The method, as set forth in claim 24, further comprising:
recording a time of the last weighting reallocation action when weighting was borrowed or
returned for the active connection;
comparing a current time with the last weighting reallocation action time and proceeding or not
proceeding to borrowing in response to the difference therebetween.

28. (Original) The method, as set forth in claim 24, further comprising:
recording a time of the last weighting reallocation action when weighting was borrowed or
returned for the active connection;
comparing a current time with the last weighting reallocation action time; and
proceeding to borrowing in response to the difference between the current time and the last
weighting reallocation action time being greater than a predetermined minimum time spacing
requirement, and not proceeding to borrowing in response to the difference between the current time and
the last weighting reallocation action time being less than or equal to the predetermined minimum time
spacing requirement.

29. (Original) The method, as set forth in claim 24, further comprising:
recording a time of an oldest borrow action when weighting was borrowed for the active
connection;
comparing a current time with the oldest borrow action time; and
proceeding to returning in response to the difference between the current time and the oldest
borrow action time being greater than a predetermined maximum borrow time requirement.

30. (Original) The method, as set forth in claim 24, wherein borrowing comprises:
determining available weighting of the lender class of service; and
proceed to borrowing if the available weighting is sufficient.

31. (Cancelled).

32. (Original) The method, as set forth in claim 24, further comprising:
storing data associated with each active connection, including:
 a time of last weighting reallocation for the active connection;
 an enable indicative of whether weighting reallocation is permitted for the active connection;
 a lender class identifier indicative of the class of service that weighting can be borrowed from;
 an upper threshold indicative of need to borrow weighting; and
 a lower threshold indicative of need to return borrowed weighting.

33. (Original) The method, as set forth in claim 32, wherein storing data associated with each active connection further comprises:
 storing a minimum time spacing between resource allocation actions; and
 storing a maximum time to return borrowed resources.

34. (Original) The method, as set forth in claim 31, further comprising storing data associated with each borrow action for each active connection in a linked list, with the oldest borrow action at the head of the linked list.

35. (Original) The method, as set forth in claim 34, wherein returning borrowed weighting comprises removing an oldest link in the linked list.

36. (Original) The method, as set forth in claim 24, further comprising using a weighted round robin method to schedule bandwidth assignment.

Claims 37-40 (Cancelled).